

REMARKS

The Office Action of July 14, 2004 presents the examination of claims 1-5. The present paper amends claims 1 and 5. The amendment of claim 5 is merely to put it into independent form. The amendment to claim 1 is supported by the specification as alleged in Applicants' prior paper and as more fully explained below.

Rejection under 35 USC §112, first paragraph

Claims 1-5 are rejected under 35 USC §112, first paragraph as allegedly lacking written description support in the specification. This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

The Examiner asserts that the phrase, "simultaneously amplifying a plurality of nucleotide sequences comprising at least one or more sites of single nucleotide polymorphism using genomic DNA whose amount is 10-40 ng per 100 sites and a plurality of primer pairs", in claim 1 is "new matter". Applicants strongly disagree.

In support of his position, the Examiner selectively cites a portion of the specification paragraph found at the bottom of page 4 to the top of page 5, and the Examiner asserts that the specification therefore is limited to amplification of 10 to 40 ng

of DNA having 100 regions of variation and using 100 pairs of primers.

In fact, the complete passage reads:

*In such amplification step, a preferred amount of a template DNA is 10 to 40 ng when, **for example**, nucleotide sequences of 100 regions are amplified using 100 pairs of primers. When the amount of template DNA is less than 10 ng, amplifying all 100 regions would be difficult. In other words, with 10 ng or more of a template DNA, DNA fragments can be amplified in an amount sufficient to perform the typing step described later. When the amount of template DNA exceeds 40 ng, it becomes impractical to genotype hundreds of thousands of SNP sites because a large amount of genomic DNA is required. (emphasis added)*

Applicants assert that the specification clearly describes that amplifying 100 regions using 100 pairs of primers is a non-limiting example. The words "for example" expressly indicate that this is merely an example of a species that fits within a genus. Second, the sentence "When the amount of template DNA is less than 10 ng, amplifying all 100 regions would be difficult" only points out the lower mass limits (i.e., 10 ng) of the technique, and is not limiting the scope of the invention to this one example. Likewise, the sentence "When the amount of template DNA exceeds 40 ng, it becomes impractical to genotype hundreds of thousands of SNP sites because a large amount of genomic DNA is required", points out the upper mass limit (i.e., 40 ng) of the technique, and is not limiting the scope of the invention to this other example. Moreover, the Examiner should consider the disclosure at page 12, lines 20-21, which recites that "approximately 0.1 ng of genomic

DNA is required per SNP site". This provides support for the amount of DNA as little as 10 ng per 100 sites as recited in claim 1 and also encompasses use of the technique to analyze as few as one site at a time.

In view of the above, it is clear that the amended language of claim 1 does not introduce any new matter into the present application. Accordingly, the rejection of amended claim 1, and claims 2-5 dependent thereon, under 35 U.S.C. § 112, first paragraph, for alleged lack of written description support, should be withdrawn.

Rejections over prior art

Claims 1 and 5 are rejected under 35 USC §102(b) as being anticipated by Wang et al. (Science, May 1998, 280, pp. 1077-1082). This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Wang et al. do appear to disclose multiplex PCR using a plurality of primer pairs (see page 1080, last line of middle column to line 6 of right hand column). However, Wang et al. disclose use of an amount of DNA that falls outside the scope of the instant claims. In their footnote 26, Wang et al. disclose that they use 100 ng of DNA for analysis of ~23, 46, or 92 loci. This is outside of the claimed range, by at least a factor of 5, of 10-40 ng DNA per 100 sites as recited in instant claim 1. Thus,

Wang et al. neither disclose nor suggest at least one feature of the present invention, and the instant rejection should be withdrawn.

Claims 1, 2, and 4 are rejected under 35 USC §102(b) as being anticipated by Walburger et al. (Mutation Research, January 2001, 432, pp. 69-78). This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Like Wang, Walburger also requires use of much more DNA per assay than the range stated in the instant claims 1, 2 and 4. At p. 71, second column, line 25, Walburger discloses that 100 ng of genomic DNA is used in an assay for genotyping only two polymorphic sites. Thus, Walburger utilizes at least 2.5 times the amount of DNA used in the presently claimed assay to assay as few as 1/50 the number of sites. The present invention is thus distinct from what is disclosed by Walburger and the rejection of claims 1, 2 and 4 for lack of novelty over that reference should be withdrawn.

Claims 2 and 3 are rejected under 35 USC §103(a) as being unpatentable over Wang et al. (Science, May 1998, 280, pp. 1077-1082) in view of Brookes '670 (US Patent Application Publication 2001/0046670 A1, published November 29, 2001, with a priority date of October 7, 1999). This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Applicants submit that the Examiner fails to establish *prima facie* obviousness of the claimed invention. As explained above,

Wang et al. fails to disclose or suggest at least the feature of the invention that from 10 to 40 ng of DNA is used for assay of up to 100 polymorphic sites. Brookes is cited for the proposition that "hot start" PCR was known in the art at the time the present invention was made (see, the Office Action of Oct. 22, 2005 at pp. 5-6). The combination of Brookes with Wang still fails to disclose or suggest a multiplex assay for DNA polymorphisms that utilizes only from 10 to 40 ng of DNA template to analyze up to 100 polymorphic sites. Therefore this combination of references fails to establish *prima facie* obviousness of at least one feature of the claimed invention. Accordingly, the rejection of claims 1, 2 and 4 under 35 U.S.C. § 103(a) over Wang in view of Brookes should be withdrawn.

Claim 3 is rejected under 35 USC §103(a) as being unpatentable over Walburger et al. (Mutation Research, January 2001, 432, pp. 69-78) in view of Wang et al. (Science, May 1998, 280, pp. 1077-1082). This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

Applicants submit that the Examiner fails to establish *prima facie* obviousness of the claimed invention. As in the instances of the other rejections addressed above, the combination of Wang and Walburger fails to disclose or suggest at least one feature of the claimed invention. That is, the combined references expressly disclose that an amount of template DNA much larger than the 10 to

40 ng range stated in claim 3 must be used. There is no suggestion in either of the references, or the state of the art at the time the invention was made, that a much lower amount of template DNA should be used for the analysis.

Accordingly, claim 3 is shown to be unobvious in view of the cited references and the instant rejection should be withdrawn.

The present application well-describes and claims patentable subject matter. The favorable action of allowance of the pending claims and passage of the application to issue is respectfully requested.

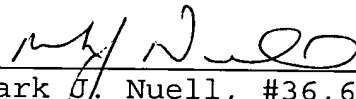
Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), Applicants respectfully petition for a three (3) month extension of time for filing a response in connection with the present application. The required fee of \$1,020.00 is being filed concurrently with the Notice of Appeal.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Mark J. Nuell (Reg. No. 36,623) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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